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AFQT: HISTORICAL DATA (1958-1972)

Bernard D. Karpinos

Human Resources Research Organization

Prepared for:

Assistant Secretary of Defense  
(Manpower and Reserve Affairs)

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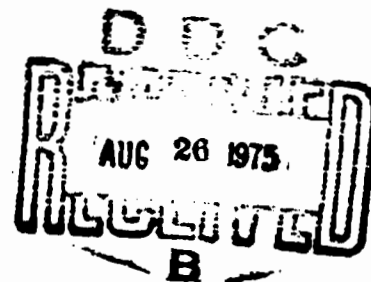
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**Bernard D. Karpinos**

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**HUMAN RESOURCES RESEARCH ORGANIZATION**  
300 North Washington Street • Alexandria, Virginia 22314

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20. ABSTRACT (Continue on reverse side if necessary; do not gild by block number) The purpose of the study was not only to indicate changes in the Armed Forces Qualification Test (AFQT) values, but to identify as well the factors that effected such changes. Data presented cover 14.5 years, and relate to pre-inductees who were selected by the Selective Service System for first time examination to determine their moral, mental, and medical fitness for military service. "Preinductees" replaces the term "draftees" used in previous studies. The study provides detailed data on distribution by mental category										

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by

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## BASIC OVERVIEW

### Scope and Objective of Report

This report was prepared in response to a request to the Department of Defense by the General Accounting Office (GAO) for overall historical AFQT (Armed Forces Qualification Test) data. Specifically, the requested data are to reflect changes over time in the mean or other related AFQT values. This report provides such data.

The presented data cover a period of some 14.5 years: from 1958 through fiscal year 1972. They relate to preinductees; namely, to registrants who were forwarded for the first time by the Selective Service System to the Armed Forces Examining and Entrance Stations (AFEES) for determining their moral, mental, and medical fitness for military service, and subsequent or immediate induction, if found qualified for such service. (In former studies (3-5), the term "draftees" has been used having the same connotation as the present term "preinductees.") For establishing the mental qualification, each examined preinductee at the AFEES has been given the AFQT, irrespective of his medical qualification, and the results of this mental test have been reported in terms of percentile score on his examination reports.

Two examination forms: DD 47 ("Record of Induction") and Standard Form 88 ("Report of Medical Examination") are accomplished at the AFEES for each examinee. (Copies of these forms are shown in Appendix D.) In addition to the AFQT percentile scores, shown on both DD Form 47 and Standard Form 88, DD Form 47 (item 10) provides detailed data on the examinee's educational attainment: years of school completed. These data, i.e., the AFQT percentile scores and educational attainment records are the basis of the presented findings.

### Specific Periods and Population Bases

The data were obtained for the following time periods: a. 1958-1963; b. 1964-1968; c. August 1969-January 1970; and d. fiscal years 1971 and 1972.

A 50-percent randomly selected sample was coded and tabulated for the 1958-1963 time period, involving some 331,000 examination forms; a 20-percent similar sample was utilized for 1964-1968 time period, involving some 103,000 examination forms; complete coverage of all

examinees was used in the 1969-1970 time period, involving some 478,000 examination forms, and similarly for fiscal years 1971 and 1972, a total of some 853,000 examination forms was coded and tabulated for this study.

For a proper understanding of the derived findings, it was thought most pertinent to provide a basic overview of the AFQT: its development and its objectives.

### The Armed Forces Qualification Test (AFQT)

Evolution of the AFQT. The Armed Forces Qualification Test (AFQT) evolved from the experience gained by the Armed Forces with selection of men for military service in World War II and during the period immediately following the war--with the experience of the Alpha and Beta mental tests of World War I in the background. This accumulated experience strongly indicated a necessity of finding means by which the examinee's mental ability could be reliably assessed as to his potential trainability and usefulness for military service.

The Alpha and Beta tests of World War I may be thus regarded as the prototype of the AFQT, and the Army General Classification Test (AGCT), used in World War II by the military services, as its progenitor. After World War II, when each military service resorted again to its own recruiting of manpower, each of them developed its own mental tests for selection. Though different in structure, primarily with respect to cut-off scores, the tests were essentially the same with respect to content areas, relying on the time-honored items of vocabulary, arithmetic, and spatial relationships.

In 1948, anticipating a request for a uniform mental test as a result of the military unification provided by Congress, the services set up a working group for such a test to be used by all of them. This group agreed on the following with respect to objective and structure of the test: a. The test should represent a "global" measure of mental ability; b. it should, therefore, contain items like those used by the various services in their individual classification tests--namely, vocabulary, arithmetic reasoning, and spatial relations; c. it should minimize the importance of speed, so that mentally capable persons who are somewhat slower would not be penalized; and d. it should reduce to a minimum, consistent with clarity, the difficulty of verbal instructions relating to test items. The AFQT is the results of the cooperative effort of this working group.

Its Objectives. The AFQT was delegated a dual function: a. To differentiate the examinees who can effectively acquire military skill from those who cannot -- in order to eliminate the latter group, and b. to provide a general index of the potential usefulness for military service of the examinees who qualified for military service, commensurate with their mental ability.

In its dual function, the AFQT has been used thus both as a screening and a classification device. The AFQT became operative in mid-year of 1950.

Early Versions. During the first two and one-half years (from July 1950 through December 1952), the AFQT consisted of 90 questions equally divided among the three content areas -- vocabulary, arithmetic, and spatial relationships. Structurally, it was a spiral omnibus type of test; that is, it was arranged in cycles of increasing difficulty and each cycle contained an equal number of questions of comparable levels of difficulty in each content area. It is a self-administered test, and it was designed to emphasize power rather than speed.

Current Versions. The current versions of the AFQT became effective in 1953. They differ from the early versions (prior to 1953) in that a fourth content area was added, relating to knowledge of tool functions -- providing, presumably, an additional measure of abilities applicable to military service.

The current versions of the AFQT consist of 100 questions equally divided among the above-mentioned four content areas; namely, word knowledge; arithmetic reasoning; spatial perception; and knowledge of tool functions. The questions are arranged, as those in the early versions, in a progressive order of difficulty.

It has been stated authoritatively that "items similar to items in the AFQT are widely used in the civilian sector to measure potential for success in formal academic training and in selection for jobs of all types at all levels. (6)

Net Raw Scoring. With the introduction of the current versions, the formula for scoring was modified to provide for greater accuracy in the test scores close to the minimum standards of acceptance. Under the earlier tests, the raw scores were based on the number of questions answered correctly. To counteract potential "successful guessing," the new scoring formula provided for subtracting a fraction (a third) of the number of questions answered wrongly from the number of questions answered correctly, not counting omitted questions. These are the "net raw scores."

The test questions are of the usual multiple-choice type--with four possible answers to each question. (See (6): The Armed Forces Qualification Test (AFQT), Information Pamphlet.)

Passing Score. In terms of "net raw score," the minimum qualifying score on the AFQT is 25 "net" correct answers, which is equivalent to 10 percentile AFQT score, established as minimum requirement by law. This bottom group includes persons "in which a preponderant percentage would be failures" for military service. (6)

Percentile AFQT Scores. In order to supply meaning to the scoring for comparative analysis, the examinee's "net raw score" (based on correct "net" answers) is converted into percentile score, which thus establishes his relative standing in a "standard population" used as a frame of reference. This is done on the basis of specific conversion tables applicable to the particular version of the test. Thus, the percentile score of 10 on the basis of his "net raw score" on the AFQT indicates that only 10 percent of the standard population scored lower and 90 percent scored as high or higher than the examinee. A percentile score of 93 means that only 7 percent in the standard population scored as high or higher than the examinee. Since the percentile distribution by AFQT was correlated and equated with that of the AGCT of World War II, the AFQT percentile scores reflect World War II mobilization population. Actually, the AGCT was standardized on the military personnel, officers and enlisted men, of all military services, as of the end of 1944. Since exemptions and deferments from military service were then at a minimum, it was assumed that the 1944 military population could be taken as "unbiased representation of the civilian manpower pool with respect to age, education, occupational status, and geographic distribution." The current mobilization population may differ in its distribution from that of World War II. However, inasmuch as all AFQT scores were standardized on the same basis, the presented comparative analyses, are assumedly not affected by it. (See (1) for further discussion of the standardization problem.)

AFQT Mental Categories. In order to provide a more workable (operational) classification of the examinee's degree of trainability, the percentile scores on the AFQT have been condensed into five mental categories. The mental categories; the required "net" correct answers for each mental category; the percentile scores on the AFQT included in each mental category; and the percentages of the standard population within each mental category are as follows:



AFQT Mental Category	Net Correct Answers	Percentile Score	Percent of the Standard Population in Each Mental Category
I	100-89	100-93	7
II	88-74	92-65	28
III	75-53	64-31	34
IV	52-25	30-10	21
	24 or less	9 or below	10

The mental categories obviously indicate progressive gradation of trainability. As previously stated, a percentile score of 10 was fixed by Congress as the minimum mental requirement. Accordingly, examinees scoring 9 and below, namely, those within Mental Category V, do not meet legally the minimum mental requirement.

#### Added Aptitude Tests

From the time it was initiated until August 1958, the AFQT was the only mental test used at the Armed Forces Examining and Entrance Stations (AFEES) (formerly named the Armed Forces Examining and Induction Stations, AFEIS)--for determining the examinee's mental qualification for military service. Examinees in Mental Category IV, as those in the upper mental categories (III-I), were considered, prior to August 1958, as fully mentally qualified for military service. Military experience, however, with the effectiveness of job assignment revealed that an appreciable number of qualified examinees in Mental Category IV did not possess sufficient aptitude to assimilate training even in the most basic military skills. This was found on the basis of specific mental tests, namely, the Army Classification Battery (ACB) administered at the Army reception centers for assignment purposes. As a result of these findings, the ACB testing was transferred in August 1958 to the AFEES (or AFEIS) for supplementary testing--to be used concomitantly with the AFQT for the purpose of eliminating such examinees at the AFEES.

In mid-September of 1961, the ACB was replaced by an equivalent test, namely, AQB-1 (Army Qualification Battery-1)--a shorter (timesaving) test which was presumably better adapted for measuring the narrower range of aptitudes required as a screening device at the AFEES.

In July, 1962, a new version of the AQB was adopted--in effect until May 1973. This AQB comprises the following seven aptitude areas: IN--Infantry; AE--Armor, Artillery, or Engineering; EL--Electronics; GM--General Maintenance; MM--Motor Maintenance; CL--Clerical; and GT--General Technical.

Only examinees in mental category IV on the AFQT have been subject to these additional (AQB) tests at the AFEES for mental qualification purposes.

Specific AQB qualifying standards were established which have radically varied from time to time. For example, during the period from May 1963-November 1965, when the AQB requirements were the strictest, only about one-third (31 percent) of the preinductees in mental category IV were able to meet the prevailing AQB standards. These standards were eventually lowered, so that during the period from December 1966 up to the end of the draft (end of fiscal year 1973), some 85 percent of the preinductees in mental category IV were able to meet the existing (during that period) AQB requirements. (See, Appendix B in which these percentages are given by time-period, and (4)(5) for a detailed discussion of the various AQB standards and the resulting mental test failures.)

### Present Concern

Our present concern, however, is not with the mental test failures of preinductees, including both the AFQT and AQB failures, but with the basic distributions of the preinductees by AFQT scores, prior to their AQB testing. Such basic data are presented here--in order to trace any changes in the AFQT values that could have occurred over time and to evaluate the factors that could have brought about such changes.

### Factors Affecting the AFQT Values

Whatever the underlying socio-economic, cultural, and other factors might be in affecting AFQT values, statistically the AFQT values during any given time-period depend on a. The prevailing distribution of the examinees by educational attainment, and b. the specific AFQT values by educational attainment. There is a definite positive correlation between educational attainment and AFQT scores; e.g., high school graduates will on the whole score higher on the test than examinees with less than high school education; similarly, examinees above high school education will on the whole score higher than high school graduates. (See (2) and (3).) Obviously, a comparatively more favorable distribution by educational attainment should naturally result in comparatively higher AFQT values, unless, of course, there was a decline in the specific scores by education that might wholly or partially counterbalance gains through the more favorable distribution by educational attainment. To repeat, the objective of this report is not only to indicate changes in the AFQT values, but to identify as well the factors that effected such changes.

## Basic Data

Toward accomplishing the above-stated objective, four basic tables were generated: Tables 1S-4S, which present detailed cross-distributions of AFQT percentile score by educational attainment (Appendix A). These tables cover the following time-periods: Table 1S -- 1958-1963; Table 2S -- 1964-1968; Table 3S -- August 1969-January 1970; and Table 4S -- fiscal years 1971 and 1972.

The "Total" column of each table provides distribution of the total group by the specified percentile score. (One may be puzzled by the widely fluctuating frequencies of these distributions. See Appendix D as to the reasons for these fluctuations; also Appendix E for the conversion table.)

The "Total" row of each table provides detailed distribution by educational attainment.

The basic data of the individual columns have been used for computing specific AFQT values by educational attainment.

These distributions provide thus bases for computing educational and AFQT values by period and tracing any changes.

## Changes in Educational Attainment

The changes in the distribution of the preinductees by educational attainment are clearly reflected in the summary data as shown in Table 1. (As previously indicated, the detailed distributions by education are shown in the "Total" row of each basic table.)

Table 1

Preinductees: Educational Attainment (Years of School Completed),  
by Specified Time Periods  
(1958-1972)\*

Time Period	Years of School Completed: Percent			Median Years of School Completed
	Less than High School	High School	High School or More	
1958-1963	44.1	34.8	55.9	12.17
1964-1968	33.5	43.0	66.5	12.38
Aug 1969-Jan 1970	22.4	43.9	77.6	12.63
Fiscal Years 1971 and 1972	22.6	35.6	77.4	12.77

\* Derived from Tables 1S-4S ("Total" rows).

Whereas some 44 percent of the preinductees in the early (1958-1963) period completed less than high school, 22.6 percent of them fell in that educational category in fiscal years 1971 and 1972. This indicates a drop of some 50 percent in the magnitude of this educational group. Simultaneously, these data indicate that the percent of preinductees who completed high school or more increased from 55.9 percent in the earliest (1958-1963) period to 77.4 percent in fiscal years 1971 and 1972 -- an increase of some 38.5 percent.

These imposing favorable changes are further demonstrated by the increasing median years of school completed -- a commonly used index of educational attainment. The median years of school completed rose from 12.2 years to 12.8 years during this presented period. These changes may be presumably regarded as closely representative of educational changes in total male population within the military age range, primarily within the 18-21 age groups.

#### Changes in the Distribution by AFQT Percentile Scores

For easier comprehension of the changes that have taken place during the presented time-periods with respect to the distributions of the preinductees by percentile AFQT score, as depicted in the "Total" columns of the source tables (1S-4S) -- the distributions are presented in Table 2 as cumulative percent; namely, Table 2 shows the percent scoring specified percentile score or higher. For instance, the data as presented in Table 2, show that while in (1958-1963) 43.5 percent of the examinees scored 50 percentile or higher, the corresponding percent for this percentile were 48.5 in (1964-1968); 52.0 in (August 1969-January 1970); and 52.0 in fiscal years 1971 and 1972 -- clearly pronounced improvements.

These changes are graphically brought out in Figure 1. The graphs to the right of the "standard population"-graph signify less favorable distributions by AFQT percentile score than that of the "standard population." This is true of the (1958-1963) and (1964-1968) periods.

The graphs to the left of the "standard population"-graph indicate a more favorable distribution by percentile score than that of the "standard population". This holds for the latest two time-periods. Again, as with respect to educational attainment, these are positive and quite impressive findings.

Table 2

Preinductees: Percent Scoring Specified Percentile Score or Higher on the  
Armed Forces Qualification Test (AFQT), by Specified Time Periods  
(1958-1972)\*

AFQT Percentile Score	Percent Scoring Specified AFQT Percentile Score or Higher, by Specified Time Periods			
	1958-1963	1964-1968	August 1969- January 1970	Fiscal Years: 1971 and 1972
93	9.0	6.7	6.2	6.5
85	16.5	15.9	16.6	17.7
80	20.9	22.6	23.6	25.3
75	24.3	25.4	26.6	28.5
70	28.8	31.4	33.0	35.2
65	32.2	34.3	35.7	38.2
60	36.1	39.9	42.3	45.1
55	39.0	43.2	46.2	49.0
50	43.5	48.5	52.0	55.0
45	46.6	52.2	56.0	59.1
40	50.2	55.7	59.7	62.9
35	53.3	58.7	63.1	66.1
31	58.6	66.2	70.2	73.1
25	62.5	69.2	73.7	76.6
21	67.0	73.0	76.6	79.4
15	74.2	80.2	83.8	86.0
10	81.5	86.8	89.4	90.9
0	100.0	100.0	100.0	100.0

\*Derived from Tables 1S-4S ("Total" columns).

**Preinductees: Percent Scoring Specified Percentile Score or Higher on the  
Armed Forces Qualification Test (AFQT), by Specified Time Periods  
(1958-1972)\***

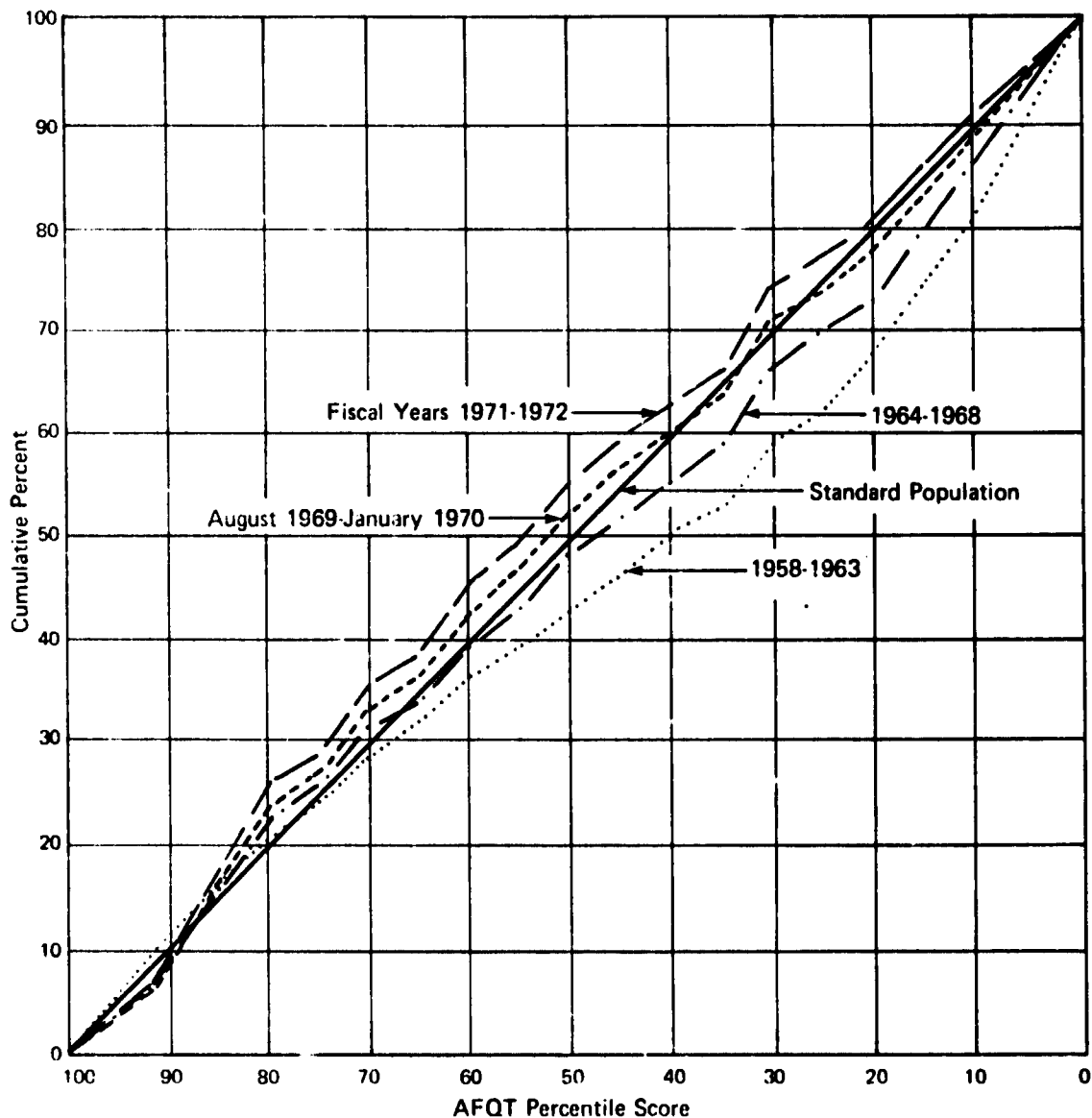


Figure 1

## Changes in the Distribution by Mental Category

In a condensed form, the changes in the distribution by AFQT percentile score are portrayed in Table 3 where the distributions are presented in terms of AFQT mental category.

Table 3  
Preinductees: Distribution by Mental Category, by  
Specified Time Periods  
(1958-1972)\*

Mental Category	Percent by Specified Time Periods			
	1958-1963	1964-1968	August 1969- January 1970	Fiscal Years: 1971 and 1972
Total	100.0	100.0	100.0	100.0
I	9.0	6.7	6.2	6.5
II	23.2	27.6	29.5	31.7
III	26.4	32.0	34.5	34.9
IV	22.9	20.6	19.2	17.8
V	18.5	13.2	10.6	9.1

\* Derived from Tables 1S-4S ("Total" columns).

Most impressive is the pronounced drop in the percent of preinductees in mental category V, namely, preinductees scoring below the AFQT percentile score 10 which is, as previously indicated, a disqualifying score. The percent in mental category V dropped from 18.5 percent in the earlier period to 9.1 percent in the latest period -- a drop of somewhat over 50 percent. Next is the significant decrease in the percent of preinductees in mental category IV. There were naturally substantial increases in the remaining mental categories, specifically in the mental categories III and II. The mental category I shows a decrease which might be contributed to changes in the deferment policies with regard to college students. (See (3).)

## Positive Changes in the AFQT Values

The AFQT values derived from the basic distributions are expressed in Table 4 in terms of median and mean values.

Table 4

Preinductees: Percentile Score on the Armed Forces Qualification Test (AFQT), by Specified Time Periods (1958-1972)\*

Time Period	AFQT Percentile Score	
	Median	Mean
1958-1963	40.3	34.3
1964-1968	48.0	38.3
August 1969- January 1970	51.7	42.0
Fiscal Years: 1971 and 1972	54.2	43.7

\* All values were derived from Tables 1S-4S.

Both the median AFQT percentile scores and the corresponding mean AFQT values indicate pronounced increases. The median AFQT percentile score gradually increased from a percentile score of 40.3 in the earliest (1958-1963) period to 54.2 percentile score in fiscal years 1971 and 1972. The mean AFQT values, of course, indicate the same positive trend by increasing from a value of 34.3 percentile score in the earliest specified period to 43.7 percentile score during the latest period.

## Changes in the Specific AFQT Percentile Score by Educational Attainment

The specific AFQT values by educational attainment are shown in Table 5. As stated before, these values in terms of percentiles were computed from the individual columns as shown in the basic tables 1S-4S.



Table 5

**Preinductees: Mean Specific AFQT Percentile Score by Educational Attainment (Years of School Completed) and Mean Standardized AFQT Percentile Score by Specified Periods (1958-1972)\***

Years of School Completed	Mean Percentile AFQT Scores, by Specified Periods			
	1958-1963	1964-1968	August 1969-January 1970	Fiscal Years: 1971 and 1972
Elementary School:				
Under 5	5.0	5.0	5.1	6.8
5 - 8	11.9	12.0	11.1	12.0
High School:				
9	18.0	18.0	17.7	18.0
10 - 11	26.2	26.3	25.0	26.3
12	44.1	43.7	41.5	42.8
College:				
1	60.6	62.0	58.4	58.0
2 - 3	68.3	68.8	65.4	66.2
4 or more	72.3	72.5	71.6	70.0
Mean Standardized AFQT Percentile Scores	45.4	45.4	43.0	43.7

\* All specific values were derived from the individual columns of Tables 1S-4S. The standardized values were derived from the specific values by assuming for all periods the same distribution by educational attainment as for fiscal years 1971 and 1972.

A mere glimpse at these values would reveal that changes for the better occurred among youths of the lowest educational level (under 5 years of school). (Their number is relatively very small, as indicated in the source tables 1S-4S). However, for the remaining educational levels, there were hardly any changes at all. It seems that the high school and the college youths of the latest periods fare no better on the AFQT than the respective youths of 15 years ago.

This is further demonstrated by the standardized AFQT percentile scores (given at the bottom of Table 5), computed by holding educational attainment constant. This simply implies, that were it not for the better distributions of the preinductees by educational attainment, as illustrated above (Table 1), their actual mean AFQT percentile scores would have remained about the same.

The standardized means indicate scores of 43.0 percentile in the (1969-1970) period and somewhat higher--43.7 percentile--in fiscal years (1971-1972), as compared with 45.4 percentile in the (1958-1963) and (1964-1968) periods.

#### A Final Note

The findings presented here relate to the United States as a whole. There are marked racial and geographic differences with respect to the distributions by educational attainment, as well as to the specific AFQT values by educational attainment. Clearly, a proper evaluation of the changes that occurred for the United States: Total requires a detailed differential study by geographic area and race. In other words, it is of most importance and of most concern to find out not only what the geographic and racial differences are, but what kind of changes occurred within each of the differential groups. Such a study is in progress.

The study will provide basic data, as those given in Tables 1S-4S, by geographic area and by race within each geographic area--for each of the presented time-periods, and will present a detailed analysis of these data.

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## APPENDIX A

### Source Tables: 1S-4S

The cross-distributions of the AFQT (Armed Forces Qualification Test) percentile scores by educational attainment, presented in the Source Tables 1S-4S, were derived from analogous original tables differentiated by race and covering the same time periods. Inasmuch as there are racial differences both with respect to the distribution by educational attainment, as well as with respect to the specific AFQT scores by education, the presented distributions by period were obtained by equally weighting the corresponding cross-distributions by race. The weighting for each period was accomplished on the basis of 8:2 ratio -- Caucasian and Other Races (non-Negro): Negro, respectively.

A comprehensive study is in progress which will evaluate the relationship between AFQT values and educational attainment by geographic area and race for the presented time periods.

Table 18

**Preinductees: Cross Distribution by Educational Attainment and  
Percentile Score on the Armed Forces Qualification Test (AFQT) and  
Mental Category, by A. Race, and B. Geographic Area**

(Calendar Years 1958-1963)

Population Base: 10,000

A. Race: Total										B. Geographic Area: United States--Total				
Mental Qualification AFQT		Years of School Completed (Highest Grade or Year)												
Mental Category	Percentile Scores	Elementary School		High School			College				TOTAL			
		Under 5	5-8	9	10-11	12	1	2-3	4 or More					
I	100-93	-	4	6	41	319	82	215	231	898				
II	92-85	-	5	9	51	314	71	156	141	747				
	91-80	-	6	7	38	201	42	80	69	443				
	79-75	-	6	8	34	163	25	49	52	337				
	74-70	-	9	11	51	223	36	66	62	458				
	69-65	-	9	11	43	169	23	42	41	338				
III	64-60	-	12	14	52	194	28	49	39	388				
	59-55	-	11	13	45	149	19	31	27	295				
	54-50	-	23	23	76	226	25	39	34	446				
	49-45	-	21	20	59	152	17	25	20	314				
	44-40	-	28	26	73	168	15	24	20	354				
	39-35	-	31	26	67	143	12	18	14	311				
	34-31	1	68	51	130	225	19	24	16	534				
IV	30-25	1	66	46	108	139	9	12	8	389				
	24-21	2	93	59	129	143	9	11	5	451				
	20-15	4	177	99	215	199	12	11	4	721				
	14-10	8	218	106	213	162	8	6	2	723				
V	Below 10	124	862	261	400	193	6	5	2	1,853				
TOTAL		140	1,649	796	1,825	3,482	458	863	787	10,920				

Table 2S

**Preinductees: Cross Distribution by Educational Attainment and  
Percentile Score on the Armed Forces Qualification Test (AFQT) and  
Mental Category, by A. Race, and B. Geographic Area  
(Calendar Years 1964-1968)**

Population Base: 10,000

A. Race : Total		B. Geographic Area : Unites States--Total									
Mental Qualification AFQT		Years of School Completed (Highest Grade or Year)									
Mental Category	Percentile Scores	Elementary School		High School			College			TOTAL	
		Under 5	5-8	9	10-11	12	1	2-3	4 or More		
I	100-93	-	1	2	22	222	114	179	131	671	
II	92-85	-	3	6	50	400	151	189	124	923	
	84-80	-	4	8	49	328	96	117	67	669	
	79-75	-	2	4	24	140	40	43	25	278	
	74-70	-	6	9	56	318	80	84	49	602	
	69-65	-	3	6	31	152	36	36	21	285	
III	64-60	-	11	14	67	308	64	66	35	565	
	59-55	-	7	10	44	181	34	32	17	325	
	54-50	-	15	18	81	292	53	46	25	530	
	49-45	-	13	15	65	207	33	28	13	374	
	44-40	-	16	19	66	186	29	25	11	352	
	39-35	-	15	17	61	160	20	17	8	298	
IV	34-31	-	53	52	174	381	44	34	14	752	
	30-25	-	28	26	78	137	13	10	3	295	
	24-21	-	46	37	106	162	14	9	4	378	
	20-15	1	109	81	218	283	19	12	3	726	
	14-10	3	129	83	205	218	12	6	1	657	
V	Below 10	27	449	208	395	229	8	4	-	1,320	
TOTAL		31	910	615	1,792	4,304	860	937	551	10,000	

Table 35

**Preinductees: Cross Distribution by Educational Attainment and  
Percentile Score on the Armed Forces Qualification Test (AFQT) and  
Mental Category, by A. Race, and B. Geographic Area**

(August 1969 through January 1970)

Population Base: 10,000

A. Race		B. Geographic Area: United States--Total									
Mental Category	Percentile Scores AFQT	Total		Years of School Completed (Highest Grade or Year)						TOTAL	
		Elementary School		High School			College				
		Under 5	5-8	9	10-11	12	1	2-3	4 or More		
I	100-93	-	-	1	6	128	81	139	269	624	
II	92-85	-	1	3	23	326	153	209	317	1,032	
	84-80	-	1	4	26	270	104	128	173	706	
	79-75	-	1	2	13	123	44	49	64	296	
	74-70	-	2	6	33	287	92	98	122	640	
	69-65	-	1	3	17	130	38	38	46	273	
III	64-60	-	3	10	48	332	89	84	97	663	
	59-55	-	3	7	33	201	47	44	46	381	
	54-50	-	7	14	56	318	71	63	58	587	
	49-45	-	6	12	43	218	42	38	33	392	
	44-40	-	7	14	47	213	39	32	26	378	
	39-35	-	10	14	47	188	33	24	18	334	
IV	34-31	-	26	39	115	403	60	43	29	715	
	30-25	-	16	22	62	199	28	17	9	353	
	24-21	-	16	22	59	156	19	11	5	288	
	20-15	2	59	70	168	361	34	17	7	718	
V	14-10	3	68	65	147	254	16	7	3	563	
	Below 10	28	269	171	286	286	9	5	3	1,057	
TOTAL		33	496	479	1,229	4,393	999	1,046	1,325	10,000	

Table 4S

**Preinductees: Cross Distribution by Educational Attainment and  
Percentile Score on the Armed Forces Qualification Test (AFQT) and  
Mental Category, by A. Race, and B. Geographic Area**

(Fiscal Years 1971 and 1972)

Population Base: 15,000

A. Race : Total			B. Geographic Area: United States: Total								
Mental Qualification AFQT	Percentile Scores	Years of School Completed (Highest Grade or Year)									
		Elementary School		High School			College				
Mental Category		Under 5	5-8	9	10-11	12	1	2-3	4 or More	TOTAL	
I	100-93	-	-	1	10	115	93	288	145	652	
II	92-85	-	1	2	32	283	185	430	184	1,117	
	84-80	-	1	3	31	235	130	258	103	761	
	79-75	-	1	2	16	105	55	103	39	321	
	74-70	-	2	6	41	240	111	198	74	672	
	69-65	-	1	2	21	109	50	83	30	296	
III	64-60	-	3	8	59	275	110	178	60	693	
	59-55	-	2	6	37	163	59	91	30	388	
	54-50	-	6	12	70	260	89	127	40	604	
	49-45	-	5	10	54	178	56	75	23	401	
	44-40	-	7	12	59	176	49	63	19	385	
IV	39-35	-	7	11	55	148	39	46	13	319	
	34-31	2	21	11	139	322	80	85	24	704	
	30-25	-	12	18	82	160	34	31	8	345	
	24-21	-	13	19	74	126	23	19	4	278	
	20-15	2	48	58	197	278	43	32	5	663	
V	14-10	3	51	51	165	187	21	14	2	494	
	Below 10	22	211	131	314	200	15	13	1	907	
	TOTAL	29	392	383	1,456	3,560	1,242	2,134	804	10,000	



# APPENDIX B

## Preinductees: Percent in Mental Category IV Who Would Qualify Under the AQB Requirements of the Specified Periods

Period	Percent in Mental Category IV Who Would Qualify Under the Prevailing AQB Standards		
	Total	High-School Graduates	Non-High School Graduates
Prior to August 1958	100.0	100.0	100.0
August 1958 - May 1963	68.1	73.2	64.4
May 1963 - November 1965	31.2	42.0	23.3
November 1965 - April 1966	42.9	69.6	23.3
April 1966 - October 1966	55.3	69.6	44.8
October 1966 - December 1966	72.0	82.5	64.4
December 1966	85.1	100.0	74.3

## **APPENDIX C: Examination Forms**

**C (1) DD Form 47: Record of Induction**

**C (2) Standard Form 88: Report of Medical Examination**

# Appendix C (1)

RECORD OF INDUCTION				Form Approved Budget 5 Code No. 22-R002.6		DO NOT DEFACE THIS STAMP													
SECTION I - GENERAL (Local Board Will Prepare From Latest Information Available)																			
1. LAST NAME - FIRST NAME - MIDDLE NAME				2. SERVICE NUMBER (To be assigned by Induction Station)		(Local Board of Origin Stamp)													
3. HOME OF RECORD (Number and street or rural route - if none on state - city or post office, county and state) (To be assigned by Induction Station)				14. CURRENT ADDRESS															
4. SELECTIVE SERVICE NUMBER		5. DATE OF BIRTH DAY MONTH YEAR		6. MARITAL STATUS <input type="checkbox"/> SINGLE <input type="checkbox"/> MARRIED <input type="checkbox"/> DIVORCED <input type="checkbox"/> WIDOWED		7. DEPENDENTS a. NO CHILDREN UNDER 18 b. OTHER DEPENDENTS (Excludes wife, if married, and children indicated in item 7a)													
8. PRIOR MILITARY SERVICE <input type="checkbox"/> YES <input type="checkbox"/> NO (If "Yes", Complete Name Below)																			
9. ARMED FORCE IN <input type="checkbox"/> ARMY <input type="checkbox"/> NAVY <input type="checkbox"/> AIR FORCE <input type="checkbox"/> MARINE CORPS <input type="checkbox"/> COAST GUARD		10. COMPONENT <input type="checkbox"/> REGULAR <input type="checkbox"/> RESERVE <input type="checkbox"/> NO		11. SERVICE NUMBER		12. DATE OF ENL. NO. APT AND/OR ORDER TO ACTIVE DUTY													
13. PRESENT CIVILIAN TRADE OR OCCUPATION (Type of business)		14. LENGTH OF EXPERIENCE YEARS MONTHS		15. DATE OF DISCHARGE OR RELEASE		16. REASON AND AUTHORITY FOR DISCHARGE OR RELEASE (To be appropriate service regulation)													
				17. CHARACTER OF DISCHARGE OR SERVICE		18. REASON AND AUTHORITY FOR DISCHARGE OR RELEASE (To be appropriate service regulation)													
19. EDUCATION																			
GRADE OR YEAR COMPLETED (Line through all grades or years successfully completed) (Exclude trade or business schools)		ELEMENTARY AND HIGH SCHOOL NONE 1 2 3 4 5 6 7 8 9 10 11 12										COLLEGE 1 2 3 4				POST GRADUATE 1 2 3 4			
20. PLACE OF BIRTH		21. U.S. CITIZEN <input type="checkbox"/> YES <input type="checkbox"/> NO		IF NOT A U. S. CITIZEN: a. DATE OF ENTRY INTO U.S. FOR <input type="checkbox"/> PERMANENT <input type="checkbox"/> TEMPORARY RESIDENCE b. ALIEN REGISTRATION RECEIPT CARD NUMBER c. FOREIGN COUNTRY OF WHICH CITIZEN															
22. IF NATURALIZED CITIZEN, GIVE DATE, PLACE, COURT OF JURISDICTION AND NATURALIZATION NUMBER																			
23. CONVICTED OR ADJUDICATED OF CRIME OTHER THAN MOTOR TRAFFIC VIOLATION (If "Yes", specify crime, date, location of court and sentence) <input type="checkbox"/> YES <input type="checkbox"/> NO														24. NOW IN CUSTODY OF LAW <input type="checkbox"/> YES <input type="checkbox"/> NO IF ANSWER IS "YES", IS NECESSARY RELEASE OR WAIVER ATTACHED? <input type="checkbox"/> YES <input type="checkbox"/> NO					
25. PREVIOUSLY EXAMINED AND NOT ACCEPTABLE <input type="checkbox"/> YES <input type="checkbox"/> NO (If "Yes", indicate why following) <input type="checkbox"/> NOT ACCEPTABLE ON PREINDUCTION <input type="checkbox"/> NOT ACCEPTABLE ON INDUCTION <input type="checkbox"/> NOT ACCEPTABLE ON ENLISTMENT																			
SECTION II - LOCAL BOARD MEDICAL INTERVIEW																			
26. PHYSICAL DEFECTS (To be completed by Local Board)		a. LIST ALL DEFECTS AND DISEASES CLAIMED BY THE REGISTRANT AND ANY DEFECTS OR DISEASES WHICH THE REGISTRANT MAY HAVE, AND WHICH ARE KNOWN TO THE LOCAL BOARD (If no defects, indicate by "None")																	
27. PHYSICAL DEFECTS (To be completed by Local Board)		b. ARE ANY OF THE DEFECTS OR DISEASES LISTED IN ITEM "a" ABOVE INCLUDED IN LIST OF DEFECTS (For 1605, 1606, 1607)? <input type="checkbox"/> YES <input type="checkbox"/> NO																	
		c. REGISTRANT OR AFFIDAVIT REFERRED TO LOCAL BOARD MEDICAL ADVISOR <input type="checkbox"/> YES <input type="checkbox"/> NO																	
28. STATEMENT OF LOCAL BOARD MEDICAL ADVISOR (To be completed if item 26c is "Yes")																			
29. FINDINGS: a. <input type="checkbox"/> REGISTRANT DOES NOT HAVE DISQUALIFYING DEFECT(S) CLAIMED b. <input type="checkbox"/> REGISTRANT HAS THE FOLLOWING DISQUALIFYING DEFECT OR DEFECTS (Specify the principal disqualifying defect first, list all other defects in order of significance, and attach affidavits or statements)																			
30. REMARKS																			
DATE		PLACE				SIGNATURE OF LOCAL BOARD MEDICAL ADVISOR (When item 28c is "Yes")													
DATE		PLACE				SIGNATURE OF MEMBER OR CLERK OF LOCAL BOARD (When item 28c is "No")													

Appendix C (1) (Continued)

SECTION III - MEDICAL DETERMINATION												SECTION IV - ORDER OF REGISTRY SERVICE PREFERENCE		
NOTE: Changes in physical profile or physical category on SF 88 will be entered on separate lines under final determination.														
18	DATE	PHYSICAL PROFILE SERIAL						PHYSICAL CATEGORY				19. PLACE ORDER OF PREFERENCE NUMBER IN BOX		
		P	U	L	H	E	S	A	B	C	E	<input type="checkbox"/> ARMY	<input type="checkbox"/> NAVY	
												<input type="checkbox"/> MARINE CORPS	<input type="checkbox"/> COAST GUARD	
												<input type="checkbox"/> AIR FORCE	<input type="checkbox"/> NONE	
SECTION V - MENTAL DETERMINATION														
20a. TEST - FORM - SCORE								APPT MENTAL GROUP	I	II	III	IV	V	
20b. OTHER TEST/VI								<input type="checkbox"/> ADMINISTRATIVELY ACCEPTED <input type="checkbox"/> QUALIFYING <input type="checkbox"/> NONQUALIFYING						
SECTION VI - MORAL DETERMINATION														
21. REGISTRY HAS BEEN PERSONALLY INTERVIEWED AT THE OF: a. <input type="checkbox"/> PREINDUCTION - REVEALS COURT ADJUDICATION OR CONVICTION <input type="checkbox"/> YES <input type="checkbox"/> NO    WAIVER: <input type="checkbox"/> NOT REQUIRED <input type="checkbox"/> GRANTED <input type="checkbox"/> NOT GRANTED <input type="checkbox"/> NOT PROCESSED b. <input type="checkbox"/> INDUCTION - REVEALS COURT ADJUDICATION OR CONVICTION <input type="checkbox"/> YES <input type="checkbox"/> NO    WAIVER: <input type="checkbox"/> NOT REQUIRED <input type="checkbox"/> GRANTED <input type="checkbox"/> NOT GRANTED <input type="checkbox"/> NOT PROCESSED <sup>1</sup> Except where in this violation.    REMARKS:														
SECTION VII - DETERMINATION AT PREINDUCTION EXAMINATION														
22. THE QUALIFICATIONS OF THE ABOVE NAMED REGISTRY HAVE BEEN CONSIDERED IN ACCORDANCE WITH THE CURRENT REGULATIONS GOVERNING THE ACCEPTANCE OF SELECTIVE SERVICE REGISTRANTS AND HE WAS THIS DATE:														
a. <input type="checkbox"/> FOUND ACCEPTABLE FOR INDUCTION INTO THE ARMED FORCES    b. <input type="checkbox"/> FOUND NOT ACCEPTABLE FOR INDUCTION INTO THE ARMED FORCES FOR THE FOLLOWING REASONS: ADMINISTRATIVE: <input type="checkbox"/> MORAL <input type="checkbox"/> ALIEN <input type="checkbox"/> OTHER ADMINISTRATIVE (Specify) _____ <input type="checkbox"/> TRAINABILITY LIMITED (F-0) <input type="checkbox"/> FAILED APOT ONLY <input type="checkbox"/> FAILED APOT AND MEDICAL <input type="checkbox"/> FAILED MEDICAL ONLY <input type="checkbox"/> PSYCHIATRIC <input type="checkbox"/> OTHER MEDICAL														
DATE		PLACE												
TYPED NAME, GRADE, AND ORGANIZATION OF CO OF INDUCTION STATION										SIGNATURE				
SECTION VIII - DETERMINATION AT INDUCTION EXAMINATION														
23. TYPE OF EXAMINATION (Check one): <input type="checkbox"/> PHYSICAL INSPECTION <input type="checkbox"/> COMPLETE MEDICAL EXAMINATION (Due to type of item) <input type="checkbox"/> COMPLETE MEDICAL AND MENTAL EXAMINATION (Intelligence, personality, interview, etc.) a. <input type="checkbox"/> FOUND ACCEPTABLE FOR INDUCTION INTO THE ARMED FORCES    b. <input type="checkbox"/> FOUND NOT ACCEPTABLE FOR INDUCTION INTO THE ARMED FORCES FOR THE FOLLOWING REASONS: ADMINISTRATIVE: <input type="checkbox"/> MORAL <input type="checkbox"/> ALIEN <input type="checkbox"/> OTHER ADMINISTRATIVE (Specify) _____ <input type="checkbox"/> TRAINABILITY LIMITED (F-0) <input type="checkbox"/> FAILED APOT ONLY <input type="checkbox"/> FAILED APOT AND MEDICAL <input type="checkbox"/> FAILED MEDICAL ONLY <input type="checkbox"/> PSYCHIATRIC <input type="checkbox"/> OTHER MEDICAL														
DATE		PLACE												
TYPED NAME, GRADE AND ORGANIZATION OF CO OF INDUCTION STATION										SIGNATURE				
SECTION IX - DISPOSITION OF INDUCTION BY ARMED FORCES														
24. THE QUALIFICATIONS OF THE ABOVE NAMED INDIVIDUAL HAVE BEEN CONSIDERED IN ACCORDANCE WITH CURRENT REGULATIONS GOVERNING THE ACCEPTANCE OF SELECTIVE SERVICE REGISTRANTS AND HE WAS INDUCTED BY:												25. DATE OF INDUCTION		
<input type="checkbox"/> ARMY <input type="checkbox"/> NAVY <input type="checkbox"/> MARINE CORPS <input type="checkbox"/> COAST GUARD <input type="checkbox"/> AIR FORCE														
AND ORDERED TO REPORT TO				a. ORGANIZATION				b. LOCATION				c. DATE		
d. INDUCTION STATION AT WHICH INDUCTED														
TYPED OR STAMPED NAME AND GRADE OF INDUCTION OFFICER										SIGNATURE OF INDUCTION OFFICER				
SECTION X - FINGERPRINTS OF RIGHT HAND (Fingerprints impressions will be made in this space in the case of every person inducted)														
1. THUMB	2. INDEX			3. MIDDLE			4. RING			5. PINKY				

120-100

## Appendix C (2)

Standard Form 88  
(Rev. June 1956)  
Bureau of the Budget  
Circular A-52 (Rev. 1)

## REPORT OF MEDICAL EXAMINATION

98-108

1. LAST NAME—FIRST NAME—MIDDLE NAME			2. GRADE AND COMPONENT OR POSITION		3. IDENTIFICATION NO.
4. HOME ADDRESS (Number, street or R.F.D., city or town, State)			5. PURPOSE OF EXAMINATION		6. DATE OF EXAMINATION
7. SEX	8. RACE	9. TOTAL YEARS GOVERNMENT SERVICE MILITARY      CIVILIAN	10. AGENCY	11. ORGANIZATION UNIT	
12. DATE OF BIRTH		13. PLACE OF BIRTH		14. NAME, RELATIONSHIP, AND ADDRESS OF NEXT OF KIN	
15. EXAMINING FACILITY OR EXAMINER, AND ADDRESS			16. OTHER INFORMATION		
17. RATING OR SPECIALTY			TIME IN THIS CAPACITY (Years)		LAST SIX MONTHS

CLINICAL EVALUATION			NOTES (List every abnormality in detail. Enter pertinent item number before each comment. Continue in item 23 and use additional sheets if necessary.)
NO. MALE	(Check each item in appropriate column, enter "N" if not performed)	NO. FEMALE	
	18. HEAD, FACE, NECK AND SCALP		(Continue in item 23)
	19. NOSE		
	20. SINUSES		
	21. MOUTH AND THROAT		
	22. EARS—GENERAL (Ear & ear canal) (And two gently under item 23 and 24)		
	23. DRUMS (Perforation)		
	24. EYES—GENERAL (Visual acuity and refraction under item 25, 26 and 27)		
	25. OPHTHALMOSCOPIC		
	26. PUPILS (Equality and reaction)		
	27. OCULAR MOTILITY (Coordinated, parallel, move, nystagmus)		
	28. LUNGS AND CHEST (Include breasts)		
	29. HEART (Size, rate, rhythm, sounds)		
	30. VASCULAR SYSTEM (Hypertension, etc.)		
	31. ABDOMEN AND VISCERA (Include breasts)		
	32. ANUS AND PECTUM (Hemorrhoids, fissures, fistulae, if indicated)		
	33. ENDOCRINE SYSTEM		
	34. G-U SYSTEM		
	35. UPPER EXTREMITIES (Strength, range of motion)		
	36. FEET		
	37. LOWER EXTREMITIES (Strength, range of motion)		
	38. SPINE, OTHER MUSCULOSKELETAL		
	39. IDENTIFYING BODY MARKS SCARS, TATTOOS		
	40. SKIN, LYMPHATICS		
	41. NEUROLOGIC (Equilibrium tests under item 28)		
	42. PSYCHIATRIC (Specify any personality deviation)		
	43. PELVIC (Female only) (Check how done) <input type="checkbox"/> VAGINAL <input type="checkbox"/> RECTAL		

44. DENTAL (Place appropriate symbols above or below number of upper and lower teeth, respectively)

O—Restorable teeth  
I—Nonrestorable teeth

X—Missing teeth  
XX—Replaced by dentures

(If N.A.—Fixed bridge, brackets to include appliances)

45. VARIANTS AND ADDITIONAL DENTAL DEFECTS AND DISEASES

R	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	L
I	38	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	F
G																	T
N																	
T																	

## LABORATORY FINDINGS

45. URINALYSIS A. SPECIFIC GRAVITY		46. CHEST X RAY (Place, date, film number and result)	
B. ALBUMIN	C. MICROSCOPIC		
D. SUGAR			
47. SEROLOGY (Specify test used and result)	48. EKG	49. BLEED TYPE AND RH FACTOR	50. OTHER TESTS

Appendix C (2) (Continued)

MEASUREMENTS AND OTHER FINDINGS																	
51. HEIGHT		52. WEIGHT		53. COLOR HAIR		54. COLOR EYES		55. BUILD (Check one)		56. SLENDER	57. MEDIUM	58. HEAVY	59. OBESSE	60. TEMPERATURE			
57. BLOOD PRESSURE (Arm at heart level)						58. P.L.B. (Arm at heart level)											
A SITTING		SYS		DIA.		B RECURRENT		SYS		DIA.		C STANDING (3 min)		SYS		DIA.	
A SITTING		B AFTER EXERCISE		C 3 MIN AFTER		D RECURRENT		E AFTER STANDING 3 MIN.									
59. DISTANT VISION						60. REFRACTION						61. NEAR VISION					
RIGHT 20/		CORR. TO 20/		BY		S.		CX		CORR. TO		BY					
LEFT 20/		CORR. TO 20/		BY		S.		CX		CORR. TO		BY					
62. HETEROPHORIA (Specify distance)																	
ES°		EX°		R H		L H		PRISM DIV.		PRISM CORR. CT		PC		PD			
63. ACCOMMODATION				64. COLOR VISION (Test used and result)				65. DEPTH PERCEPTION (Test used and result)				66. UNCORRECTED					
RIGHT				LEFT								CORRECTED					
66. FIELD OF VISION				67. RIGHT VISION (Test used and result)				68. RED LENS TEST				69. INTRACULAR TENSION					
70. HEARING				71. AUCTIONETER				72. PSYCHOLOGICAL AND PSYCHOMOTOR (Test used and result)									
RIGHT WV		/15 SV		/15		RIGHT		LEFT									
LEFT WV		/15 SV		/15													
73. NOTES (Continued) AND SIGNIFICANT OR INTERVAL HISTORY																	
(Use additional sheets if necessary)																	
74. SUMMARY OF DEFECTS AND DIAGNOSES (List diagnoses with item numbers)																	
75. RECOMMENDATIONS—FURTHER SPECIALIST EXAMINATIONS INDICATED (Specify)										76. A PHYSICAL PROFILE							
										P U L H E S							
77. EXAMINEE (Check)										B PHYSICAL CATEGORY							
A <input type="checkbox"/> IS QUALIFIED FOR																	
B <input type="checkbox"/> IS NOT QUALIFIED FOR																	
78. IF NOT QUALIFIED LIST DISQUALIFYING DEFECTS BY ITEM NUMBER										A B C E							
79. TYPED OR PRINTED NAME OF PHYSICIAN										SIGNATURE							
80. TYPED OR PRINTED NAME OF PHYSICIAN										SIGNATURE							
81. TYPED OR PRINTED NAME OF DENTIST OR PHYSICIAN (Indicate which)										SIGNATURE							
82. TYPED OR PRINTED NAME OF REVIEWING OFFICER OR APPROVING AUTHORITY										SIGNATURE							
										NUMBER OF ST. TACHIO MILETS							

U.S. GOVERNMENT PRINTING OFFICE: 1965—O-711-368

APPENDIX D

U. S. ARMY BEHAVIORAL SCIENCE RESEARCH LABORATORY  
Washington, D. C. 20315

CRDBSRL A

8 April 1968

MEMORANDUM TO: DR. KARPINOS

SUBJECT: AFQT Conversion Table

1. In the upper middle range of the AFQT conversion table (84 - 40 percentiles), the lower half of each decile has more raw score points than the upper half.
2. As a consequence, it is to be expected that operational AFQT distributions within the 84 - 40 percentile range will have more cases in the lower half of each decile than in the upper half. Analyses involving intervals of half-deciles should be undertaken with awareness of this difference. Where possible, it is recommended that the smallest interval be the decile.

A.G. Bayroff  
Senior Task Leader  
Input Quality Task

# APPENDIX E

Armed Forces Qualification Test (AFQT) --- Conversion  
Table: Raw Score to Percentile Score, By Mental Group

Mental Group:										
I		II		III		IV		V		
Raw	Percentile	Scores		Scores		Scores		Scores		
		Raw	Percentile	Raw	Percentile	Raw	Percentile	Raw	Percentile	
100	100	98	91	73	63	51	28	24	9	
99	100	97	89	72	61	50	27	22	9	
98	100	86	87	71	59	49	26	22	3	
97	100	85	86	70	57	48	25	21	8	
96	99	84	84	69	55	47	24	20	7	
95	99	83	82	68	53	46	23	19	7	
94	99	82	80	67	51	45	22	18	6	
93	97	81	78	66	49	44	21	17	6	
92	96	80	76	65	48	43	21	16	6	
91	95	79	74	64	46	42	20	15	5	
90	94	78	72	63	44	41	19	14	5	
89	93	77	70	62	43	40	18	13	5	
		76	69	61	42	39	18	12	4	
		75	67	60	40	38	17			
		74	65	59	39	37	16	10	4	
				58	38	36	16	9	3	
				57	36	35	15	8	3	
				56	35	34	14	7	3	
				55	34	33	14	6	3	
				54	32	32	13	5	2	
				53	31	31	13	4	2	
				52	30	30	12	3	2	
						29	12	2	2	
						28	11	1	1	
						27	11	0	1	
						26	10			
						25	10			

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